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NEW DATA IN THE STUDY OF CATTLE DISEASES IN THE USSR

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Prerevolutionary veterinary medicine for many years was concerned primarily with combating plague and mass /epidemic/ pneumonia (PVL). Very little was done to control the outbreaks of the foot-and-mouth disease. Not until after the October Revolution was Soviet veterinary medicine able to deal properly with these diseases.

Rinderpest

Conditions during World War I and inadequate veterinary control led to a break in the protective quarantine zone in Transcaucasia in the last year of the war. As a result, rinderpest appeared in parts of the Caucasus, spread along the Volga, across the Ukraine, and in 1921 - 1922, reached the central provinces. The extent of this epizootic can best be judged by the fact that, in 1920, a large number of cattle were infected with rinderpest. On 28 April 1921, all provincial executive committees received letters, sent by the People's Commissariat of Agriculture and signed by Lenin, stressing that rinderpest causing great harm to state and peasant farms, along with other epizootics, was deepening the economic crisis. It was requested that special attention be given to combating rinderpest and other epizootics. As a result of energetic measures taken in 1922 - 1923, this disease was pushed back to its previous borders. In 1927 - 1928, rinderpest was completely liquidated on the entire territory of the Soviet Union, including Transcaucasia and the Far East.

The liquidation of rinderpest was accomplished by engaging the help of a large number of veterinary workers and the application of rational measures devised by the Central Veterinary Administration. These measures consisted of slaughtering infected animals and protecting healthy animals through simultaneous inoculations with an active antirinderpest serum and virus of rinderpest. This system was previously tested in the course of scientific work done by Professors S. I. Drachinskiy and S. N. Vyshelesskiy and associates of the State Institute of Experimental Veterinary Medicine (GIEV), and by the Stavropol', Zurnabadskaya, and Chita Antirinderpest Stations.

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Prior to World War II, a group of Soviet veterinarians (Zykov, Spirov, Nesterov) prepared and tested a tissue vaccine with the aid of which there is annually established an immunity zone along our eastern borders which, together with the protective quarantine service, reliably safeguards the USSR from infiltration and outbreaks of rinderpest.

Peripneumonia

At the turn of the century, severe measures (slaughtering) were used to combat peripneumonia (PVL), so that this disease was liquidated among cattle in the European part of the country. However, the incidence of the disease remained high in the territory beyond the Volga, on the territory of the present Kazakh Republic, on vast expanses of West Siberia, in Russian Poland, and in the Caucasus.

Due to the difficulties encountered in the sometimes inaccurate diagnosis of this disease and the weakness of veterinary control, PVL occasionally was carried to the central provinces during the herding of cattle to slaughter. In 1913, PVL was registered in Tula, Ryazan', Tambov, Orel, Kursk, Chernigov, Smolensk, Tavricheskaya, Moscow, Vladimir, Kaluga and Mogilev provinces. Between 1914 - 1918, the epizootic of PVL spread to the provinces which are now a part of the Belorussian SSR, and also in the north (Arkhangel'sk Province, 1916) and in the south (Kiev Province, 1917).

Prerevolutionary measures for combating PVL were lacking in uniformity. In the Kingdom of Poland, quarantine measures were applied, and in certain instances, both infected and healthy cattle of infected farms were slaughtered. In the 1890's in Poland and subsequently, between 1906 and 1911, in Siberia, large-scale experimental inoculations with cultures of PVL were made. In 1911 - 1912, compulsory, preventive inoculations were carried out in West Siberia and Tobol'sk Province and on an experimental basis in Tomsk Province.

Since 1925, a supplementary serological method (RSK) for the diagnosis of PVL has been employed. With the use of the RSK method of diagnosis, it became possible to expose chronic forms of diseases which were the most difficult to distinguish by clinical investigation. The RSK method made it possible to eliminate from farms the maximum number of infected animals and dangerous infection carriers.

The organization of the Trust for Combating Epizootics (VETEPO) in the 1930's made it possible to enlist large numbers of specialists who, under a single direction and by applying a uniform method, were in a better position to combat PVL.

Continuous scientific investigation, practical epizootical observations, and laboratory experiments confirmed the expediency of vaccinating animals with cultures of PVL and defined more accurately the character and duration of immunity.

All of this led to the establishment of a rational system of measures based on a more specific diagnosis of the disease, slaughter of infected cattle, and preventive inoculations of healthy animals.

By 1939, PVL was wiped out not only from the European portions of the country, but also from its fixed nidi in West Siberia and the region beyond the Volga. Outbreaks of epizootics still occur occasionally in a few parts, so that from a purely formal point of view it is assumed that PVL has not yet been fully liquidated in the USSR.

An important role in the liquidation of this dangerous epizootic of cattle was played by the scientific and practical work of the Leningrad Institute of Comparative Pathology (Ebert, Kolyakov), Pyatigorsk Veterinary Experimental Station (VOS) (Verbov), Omsk NIVI (Scientific Research Veterinary Institute) (Ivanov), Kazakh NIVI (Vyshelesskiy, Derbedenev), Uzbek NIVI (Obolduyev), Ural VOS (Lazarev), and the Ukrainian Institute of Scientific and Practical Veterinary Medicine (Vishnevskiy).

Foot-and-Mouth Disease

The largest foot-and-mouth-disease epizootics occurred in 1892, 1896, 1911, and 1914; they originated in Asia, developed in Russia, and spread into Europe. In our time, serious epizootics of foot and mouth disease that ravaged Europe in 1919 - 1921 and in 1937 - 1939 originated in southern Europe, and, on reaching our country, faded away in its western regions. During the 30 years' existence of the Soviet Union, foot-and-mouth disease was never transferred by us to our western neighbors. It reversed its course across Europe. This fact can be convincingly explained.

In the prerevolutionary period, foot-and-mouth disease annually occurred in both large or small territories of our country. A systematic fight against this disease was not conducted, and it was allowed to run its course until it died out. A peculiarity of foot-and mouth disease, as compared with many malignant Western European epizootics, was that it was of a mild form, causing death only among young livestock and emaciated cattle.

In the 1920's, planned and intensive scientific work on the disease was begun at the GIEV by Vyshelesskiy, Skomorokhov, and Blazhevich.

In the 1930's, this work was expanded at a special foot-and-mouth-disease institute (Skomorokhov). To replace this institute, foot-and-mouth-disease laboratories were organized at the VIEV (All-Union Institute of Experimental Veterinary Medicine) (Ratner), and the Leningrad (Lavrovskiy, Dobrotvorskaya), Kazakh (Kindryakov), and Omsk NIVI. Scientific work was also carried on in different localities by expeditions. Contemporary data made available by Soviet science on the epizootic regularities, multiplicity of causative-agent types and the stability of the causative factor, transmission by virus carrier, other ways and means by which transmission takes place, immunity, and means of prevention were used as a basis for state measures which were adopted for liquidating epizootics of the foot-and-mouth disease in our country. In addition to quarantine, sanitation, and organizational measures, which were worked out in detail, it is recommended that, in necessary cases, serum of blood of recovered animals and certain prophylactic substances be used. If the need should arise, there can be produced an active hyperimmune serum, the production of which has been developed in the USSR and presents no difficulties. In 1940, the VIEV prepared in an experimental form a GOAL vaccine, which, in subsequent years, has been introduced widely into practice.

All of these practical measures and resultant effects in combating foot-and-mouth disease were established for the purpose of serving the interests of the people and securing and improving their economic welfare.

Tuberculosis

In the prerevolutionary period, there was no organized fight against tuberculosis. Occasional tuberculin tests of cattle showed that 35 to 40 percent of the animals exhibited a reaction.

An effective quarantine against the spread of tuberculosis was not established in our country until after the October Revolution.

Following the Revolution and Civil War, the wiping out of tuberculosis was given a high priority. An important role in the realization of this task was given to a special tuberculosis laboratory, organized in 1922 in the GIEV (Vyshelskiy, Vishnevskiy, Obukhovskiy, Savel'yev, Yuskovets, Prokhorov, and Alikayeva). Some of the problems studied by this laboratory during the past 25 years dealt with the spread of this disease, its economic and hygienic significance, reliable methods of clinicobacteriological, serological, and allergy diagnosis, methods for factory production of tuberculins and their use, strict isolation of potential bacillus carriers, methods of raising healthy offspring from reactive mothers, methods of vaccination, and many details of a scientific and practical nature. The scientific and practical experience gained at this laboratory was reported in numerous articles and monographs.

Certain elementary measures were included in the veterinary charter as early as 1923, and, by 1926, an adequate plan for combating tuberculosis was already worked out. This plan was published in a decree of the People's Commissariat of Agriculture.

On the basis of subsequent and more determined instructions which were published, it was possible, in the RSFSR, to reduce the incidence of tuberculosis among cattle, between 1926 and 1945, from 26.7 to 0.97 percent on state farms and from 5.44 to 0.2 percent at kolkhozes.

Such outstanding results were not obtained in any other country. Results obtained thus far point to the possibility of wiping out completely tuberculosis among all types of farm animals and birds.

Paratubercular Enteritis

Isolated cases of this disease were first detected in our country in 1911 and again in 1925. No practical conclusions were drawn from these findings.

A real study of paratubercular enteritis was begun in 1932 at the VIEV (Vishnevskiy, Prokhorov, Alikayeva). Extensive studies have been made on the etiology, pathological anatomy, and histology, diagnosis, and pathogenesis of this disease; These studies were made in the case of cattle and sheep which were afflicted with paratubercular enteritis. Many years were devoted to the study of the microbiology of the causative agent and to the improvement of methods for its cultivation. A new diagnostic preparation called paratuberculin was found, and the incidence of this infection was explained.

On the basis of these discoveries, a method for combating paratubercular enteritis of cattle and sheep was worked out and adopted in the Soviet Union, and published in the form of instructions in 1940.

The USSR is the only country in the world in which the fight against paratubercular enteritis is regulated by the state.

Leptospirosis

Leptospirosis was first detected in the USSR in the 1930's. In a relatively short time, a thorough understanding of this disease was gained. Apparently, leptospirosis was observed in the Caucasus a long time ago but remained unidentified due to its resemblance to piroplasmosis.

The following veterinary experimental stations carried out work which cleared up the error in regard to leptospirosis, explained clinical and epizootological problems, and detected species of susceptible animals: Stavropol' (Nikol'skiy, Desyatov, Makhalov), Rostov (Ramanenko, Dukalov), Voronezh (Zemtsov, Avrorov), Armenian, Azerbaydzhan (Farzaliyev), Institute of Fur-Bearing Animals (Lyubashenko), and VIEV (Andreyev, Vishnevskiy).

The Institute imeni Mechnikov, located in Moscow (Terskikh, Varfolomeyeva), established the causative agent of leptospirosis.

Of particular interest is the work done in connection with the search for specific means of prophylaxis and treatment by such means as vaccines, hyperimmune sera, and serum from animals which had recovered from the disease. Of these only the biologicals prepared at the Institute of Fur-Bearing Animals have been approved for production up to date. Lyubashenko was awarded the Stalin Prize for these biologicals.

The Rostov, Voronezh, and Stavropol' VOS obtained positive results in their search for analogous biologicals.

The availability of specific means for preventing the disease and a rational program for combating it raises the possibility of rapidly liquidating leptospirosis in the near future.

Diseases of Calves

Prior to the October Revolution, little attention was given to these diseases. Following the revolution the system of animal husbandry changed significantly. Emphasis was placed on its planned development, improving the strain of cattle, and raising its productivity. A quantitative as well as qualitative approach to animal husbandry was made. Veterinary medicine was given the task of protecting young livestock and finding measures and means for combating infectious diseases of calves.

At present, the study of these diseases has been brought to a point where all laboratory and practical veterinary specialists are in a position to analyze them confidently and distinguish one disease from another. Consequently, the effectiveness of veterinary aid in combating diseases of calves has been raised significantly.

In addition to well-developed organizational and general prophylactic measures, there have been introduced into practice such specific preparations for preventing infectious diseases in calves as paratyphoid vaccine, anticoliparatyphoid and antityphoid serums, antivirus; antisepticemic (Pasteurella) serum, antifoot-and-mouth-disease serum and blood of animals which have recovered from the disease, leptospirosis vaccine and antileptospirosis serum, diplococcus vaccine and antidiplococcus serum (on the basis of wide experience), and coliparatyphoid bacteriophages.

The quantity of prophylactically active substances indicated in calves' diseases was increased by many times. A number of these substances and their uses include lactobacillin or acidophilin, lysozym, natural and artificial colostrum, chicken eggs, hay infusion (brew), oatmeal gel, protein therapy, sulfamide, (disulfan and sulfanthrol) in cases of paratyphoid and colibacillosis, sulfanthrol, ammargen (in cases of leptospirosis), 35-proof alcohol, white and red streptocides as such and combined with glucose, sulfidine, neosalvarsan, rivanol, (in cases of diplococcus septicemia) and neoarsenol (in cases of Pasteurellosis).

The study of calves' diseases occupied one of the most prominent positions in the activities of veterinary specialists, and not a single enzootic outbreak of infectious diseases of calves lacks veterinary aid in combating it.

One of the more important achievements of Soviet veterinary medicine is the scientifically based and widely used system of graduated raising of calves (according to age groups) or of establishing sanitary barriers. As a result of this system, not only is the natural resistance of calves increased and a prophylactic condition developed against the spread of infections on the farm, but there is also established a reliable basis for raising healthy, young livestock apart from mothers afflicted with tuberculosis or brucellosis. This original Soviet system turned out to be feasible and applicable only in the Soviet Union.

These achievements brought about a sharp decline in the loss of calves from infectious diseases, especially from such acute and destructive diseases as paratyphoid and colibacillosis.

Important results in scientific and practical work on calves' diseases were obtained mainly as a result of the participation in this work of all scientific research institutes, stations, laboratories, and the entire collective of practical veterinary doctors.

Such are the principal achievements in the struggle with infectious diseases of cattle. These diseases were responsible for a great economic loss in the past and are still of importance today.

These achievements indicate that, in the past 30 years, Soviet veterinary medicine has fully acquired all contemporary knowledge and methods and plays a leading role in the solution of problems connected with tuberculosis, paratubercular enthritis, and diseases of young livestock. The USSR surpasses other countries in regard to the extent and effectiveness of measures applied against veterinary diseases.

We can rightfully claim that Soviet veterinary medicine occupies a leading position in the solution of these problems.

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